

AMERICAN FARMER.

RURAL ECONOMY, INTERNAL IMPROVEMENTS, PRICES CURRENT.

"O fortunatos nimium sua si bona norint
Agricolae." . . . VIRG.

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AGRICULTURE.

THE HOP.

[We have been for some time endeavouring to obtain from some of our Massachusetts correspondents, information respecting the culture of the Hop—the manner of gathering and preparing it for sale, &c. &c. according to the practice pursued in the Eastern States—to which all our Brewers look for their supply of this valuable article. In conversation some time since with an eminent Brewer of this city, he maintained that the article is raised in New England, and transported and sold in this market, for less money than we could pick them from the vines! and this remarkable avowal, strengthened the desire to sift the subject to the bottom, and find out how it happens, that this source of handsome revenue to the thrifty farmer of the East, should be entirely denied to, or neglected by the land holder in the middle and southern states, whose duty and interest, it is in these "hard times," to develop, and avail himself of every possible means of relief from the pressure of his actual condition.

We shall take the first opportunity to ascertain how much money is annually sent out of the State of Maryland, for the article of hops alone, by brewers of malt liquors. In the mean time a liberal and enlightened correspondent in Boston has promised to send us from a gentleman well qualified to prepare it, the New England method of cultivating and saving hops—and what shall we then see?—that our soil is not adapted to their growth?—that our climate forbids their culture?—or shall we see that we send abroad for Hops, as we do for fruit trees—because we have not the enterprise to do any thing out of the old track of making wheat, rye, oats and tobacco? as if they constituted the entire scope and amount of the farmer's resources!!! We should not be surprised if we find one cause of our being so freely bled in this vein, consists in this—that while to pick hops, we employ grown labourers, or hire them at 50 or 75 cents per day, the New England man, gathers them by the nimble fingers of his children and young people, such as in this state are idling, lounging and frolicking about, if rich; or begging in the streets of towns, if poor. The same respectable brewer assures us that during the war, when hops were selling at fifty cents per pound, he had given to a Pennsylvanian \$1500, for what he declared was the growth of a single acre.

How much better would it be, if the hop vine, and the good grape vine, or something useful as well as ornamental, were substituted by people in the country for the creeper, the dog grape, the honey suckle and other useless and sometimes noxious vines? Nothing can be handsomer, or sweeter than the luxuriant hop vine, growing about porches, garden pails, &c. &c.—and it is but a true and an honourable economy, to endeavour to turn all our labours to some useful end, and in times, such as these, when prices are so discouraging, and seasons so precarious, the provident farmer will endeavour to make a little "something of every thing." An English Agricultural writer of great eminence, recommends the cultivation of some hops by every farmer—were it only for the sake of making ropes with the vines for thatching stacks. But we are wandering from our purpose, which is to give the following scientific essay of experiments in relation to the in-

herent qualities of the hop—hoping soon to give a practical treatise on their culture and preservation.
Editor Amer. Farmer.]

FROM THE AMERICAN JOURNAL OF SCIENCE AND THE ARTS

An experimental Inquiry into the chymical properties and economical and medicinal virtues of the *Humulus Lupulus*, or Common Hop, by Ansel W. Ives, M. D. of New York.

The hop is a hardy perennial plant, which grows spontaneously in the northern parts of Europe and America.* It belongs to the class *Diacia*, and order *Penlandria*, of Linnæus. The plant which bears the male flowers is not cultivated, and is called the *wild hop*.† The common domestic hop, which is the female plant, is now to be the subject of investigation. Its general character is too well and too universally known to need description.—The hop has been regarded from time immemorial as an indispensable ingredient in malt liquors. It was introduced and cultivated for that purpose in England about the year 1549, and has since been used so extensively in that country and many others, as to have become an important article of commerce.—It has long been known, also, to possess some virtue as a medicine, and a general description of its character and properties is recorded in most Pharmacopœias.

Not having seen any accurate analysis of this article, and considering it important that the physician should know in what part of the plant its medicinal virtue resides, I commenced some experiments with a view to ascertain this object. The facts which were developed in the progress of the investigation, were, to me, novel and unexpected: and the results to which they obviously led; altogether different from what I had anticipated. The medicinal character of the hop was, therefore, now regarded as a subject of minor importance: for however desirable might be the merit of introducing to general use, a new and eligible form of medicine, that consideration would excite, comparatively, but little solicitude, while there existed a hope of effecting an improvement in domestic economy, which would be materially interesting to a great portion of the civilized world.

A quantity of hops were procured, which had been kept for domestic purposes, in a small bag, for three years. When they were taken from the bag, there remained about two ounces of an impalpable yellow powder, which by sifting, was rendered perfectly pure. This substance has probably been observed by most persons acquainted with the hop, and I suspect has generally been mistaken for pollen, but it is peculiar to the female plant, and is probably secreted by the nectaria. It seems to have been more correctly appreciated by those accustomed to the domestic use of hops, than by many others professing a more scientific knowledge of their culture properties, and use. I have not been able to find any notice of this powder in books, and do not know that it has been designated by any appropriate term. In the following inquiry, therefore, it will be called *Lupulin*.

Exp. 1.—One drachm of lupulin was boiled with two ounces of water, in a small retort, till a third

* That the *Humulus* is a native of America, has been confirmed by the observations of Micheaux, Nuttall, Eaton, Torrey, and others.

† A very accurate drawing and minute dissection of the male and female hop plant may be found in "Darmach's Encyclopedia," part 22d, plate 815.

‡ Writers have generally used the term *hop-plant* to distinguish the whole vegetable, and the *hop* to designate the part of it used in brewing.

part of the water had passed over into a receiver. The fluid that came over indicated slightly the peculiar aromatic flavour of the hop; it was perfectly transparent, very little discoloured, and exhibited no appearance of a volatile oil. The water remaining in the retort was aromatic and bitter. When filtered and evaporated, it yielded ten grains of a pale yellow extract, intensely bitter, and possessing in a high degree the peculiar aromatic taste of the hop.

Exp. 2.—Two ounces of the best merchantable hops were distilled in a retort, with six ounces of water, till half of the fluid had passed over into a receiver of water. The water in the receiver was slightly impregnated with the odour of the hop, but there was no appearance of volatile oil.

Exp. 3.—Two drachms of lupulin were boiled in a retort with three ounces of alcohol. The alcohol came over strongly impregnated with the aroma of the lupulin: but there was no visible indication of an essential oil. The remaining alcohol had assumed a brilliant yellow colour, and a pleasant but intensely bitter taste: when filtered and evaporated, it yielded one drachm of extract of the consistence of soft wax.‡

Exp. 4.—A saturated decoction of the lupulin was prepared with pure water. It was opaque and of a pale yellow colour. By adding to a portion of it, a solution of the sulphate of iron, the colour was changed to a deep purple approaching to a black; a solution of animal gelatine threw down a copious ash-coloured precipitate, which left the supernatant liquor transparent and clear. The liquor was now decanted; by adding to it a solution of iron, it was changed to a pale blue; the acetate and subacetate of lead, caused a copious curdy yellow precipitate; the nitrate of silver, a greenish flocculent precipitate; muriate of tin, when first added, produced no change, but after standing a short time, a brown precipitate; a solution of sulphate of alumine, caused no immediate change, but by boiling with the decoction, it separated a dense precipitate. Silicated pot ash, alcohol, and vegetable blue, induced no change.

Exp. 5.—Two drachms of lupulin in four ounces of water, were digested six hours in a sand bath. The infusion yielded by evaporation six grains of aromatic and bitter extract. Two ounces of proof spirit were added to the same lupulin, and subjected to a moderate heat twelve hours; when filtered and evaporated, there remained six grains of a resinous extract. The same lupulin was digested thirty minutes in boiling alcohol, from which was obtained by evaporation sixty-two grains of extract. The extract obtained by the second process was soluble in pure alcohol, and when water was added to the solution, it became turbid and milky.

Exp. 6.—The lupulin used in the last experiment was boiled in strong caustic ammonia. When filtered and supersaturated with distilled vinegar, a copious precipitate ensued, which was insoluble in alcohol, and possessed the sensible properties of an impure wax.—The three last experiments show pretty satisfactorily, that the most important proximate principles of the lupulin are resin, wax, tannin, gallic acid, a bitter principle, and an extractive matter. The following experiments were instituted for the pur-

§ These experiments, with some variation, were frequently repeated, with the view to detect, if practicable, the volatile oil which is so frequently mentioned by authors as essential to the flavour of beer. The result was uniformly the same. The peculiar aroma of the hop was always obvious to the smell and taste, but I was never able to separate it in the form of an essential oil.

pose of ascertaining more accurately their respective proportions, as well as the aggregate amount of soluble matter in a given quantity of lupulin.

Exp. 7.—Two drachms of lupulin were infused five hours in boiling water. To the filtrated infusion, were added at intervals, five grains of animal gelatin in solution, when it ceased to produce any precipitate, and the supernatant liquor became transparent and clear. The sediment, when dry, weighed ten grains. An ounce of alcohol was added to the filtered solution, but it caused no change; by evaporation, it yielded fifteen grains of a very bitter extract. The same lupulin was digested again in boiling water—animal gelatin, added to the filtered solution, induced no precipitate; by evaporation, an additional quantity of six grains of the watery extract was obtained.

Exp. 8.—The extract obtained in the last experiment was put into pure alcohol, and frequently agitated. After twenty-four hours it was filtered: ten grains had been re-dissolved by the alcohol, and an insoluble mass, weighing eleven grains, was left upon the filter.

Exp. 9.—The same lupulin, which was used in the seventh experiment, was now digested in alcohol.—The infusion was highly bitter, and of a fine yellow colour, it gave by evaporation twenty-four grains of resin. By digesting in a second portion of alcohol, twelve grains more of resin were obtained, less bitter, but otherwise like the last.

Exp. 10.—The lupulin, which was the subject of the last experiment, after having been thus boiled in water, and digested in alcohol, was put into a small retort, and boiled in two ounces of ether. While boiling, it was filtered into a vessel containing cold water, by which means twelve grains of wax were obtained.

Exp. 11.—Half an ounce of lupulin was boiled successively in water, alcohol, and ether. On weighing the insoluble residuum, it was found that five-eighths of the whole had been taken up by the solvents.

From the foregoing experiments, all of which were with some variation, frequently repeated, I infer, that the lupulin contains a very subtle aroma, which is yielded to water and to alcohol, and which is rapidly dissipated by a high heat; that no essential oil can be detected by distillation in any portion of the hop; that the lupulin contains an extractive matter, which is soluble only in water: that it contains tannin, gallic acid, and a bitter principle, which are soluble in water, and in alcohol; that it contains resin, which is dissolved by alcohol and by ether, and wax, which is soluble only in alkalies and in boiling ether; that it contains neither mucilage, gum, nor gum-resin; that the aromatic and bitter properties of the lupulin are more readily and completely imbibed by alcohol than by water, and much sooner by both when they are hot than when they are cold; that about five-eighths of the whole substance is soluble in water, alcohol, and ether, there being about three-eighths of it vegetable fibrous matter. These proximate principles exist in very nearly the following proportions: In two drachms (or one hundred and twenty grains) of lupulin, there is

Tannin,	5 gr.
Extractive matter,	10
Bitter principle,	11
Wax,	12
Resin,	36
A woody fibrous substance, or lignin,	46

§ The usual method of separating wax from vegetables, by boiling them in caustic ammonia, and then super-saturating the alkali with vinegar, or with diluted sulphuric acid, is tedious, and the results unsatisfactory. The following is a much more easy and beautiful process. After digesting the substance in boiling water and cold alcohol, let it be boiled in ether, and the solution strained, while boiling, into cold water. The wax, which is held in solution by boiling ether, is thrown down as soon as the ether is cooled by the water; and its specific gravity, being greater than that of water, and less than that of water, it forms a beautiful partition between them. If the ether be suffered to evaporate, the wax may be taken from the water entire.

Exp. 12.—Two drachms of the leaves,* from which all the lupulin had been separated, were digested 12 hours in six ozs. of boiling water. The infusion was bitter, and exceedingly unpleasant to the taste; it possessed none of the aromatic flavour and peculiar bitter of the lupulin. When filtered and evaporated, it yielded five grains of nauseous extract. The same leaves were again digested in six ounces of proof spirit: after twelve hours, the infusion was filtrated, and, by evaporation, yielded five grains of extract, similar to the last.—The same leaves were digested twenty-four hours in alcohol; the infusion manifested none of the sensible properties of the hop; it gave by evaporation four grains of extract.—The taste of none of the extractive matter obtained from the leaves was sufficiently characteristic of the hop to designate that it was obtained from that article,†

From this and other similar experiments, leading to the same results, I think it is conclusively proved, that the virtue of the hop resides exclusively in the lupulin; that the leaves contain a nauseous extractive matter, which is imparted to water and to alcohol, and which, instead of adding to the bitter and aromatic flavour of the lupulin, partially neutralizes or destroys it.

The obvious inference from these results was, that the lupulin was the only part of the hop essential to economical purposes; an inference so little anticipated, that it became an important subject of inquiry, whether that part of the plant was duly estimated by practical brewers—whether it had been regarded by authors as preferable to the leaves, and, if so, what impediment or what consideration prevented its being separated from the chaff.

On making inquiry of a number of brewers in this city, it was ascertained that there was about one in three who considered this powder useful, in common with other parts of the plant. It was known to all, that hops were used principally for their antiseptic powers, or to preserve the beer from ascetic fermentation; but neither practical brewers, nor scientific writers on brewing, appear to have noticed this substance particularly. By some of the former it is regarded as useless. When at one brewery I asked for some of the yellow powder that was found at the bottom of the hop bags; I was told that I could find but little there, as but a few days ago they had swept half a bushel of it from the store.

I was now resolved to ascertain, if possible, the proportion of lupulin in the merchantable hop, and also whether it could be completely and readily separated from the leaves. Accordingly, six pounds of pressed hops were taken from the centre of a bag containing some hundred pounds, and exposed to heat till perfectly dry. They were then put into a light bag, and by threshing, rubbing, and sifting, fourteen ounces of pure powder were separated in a short time, and with very little labour.

Though the quantity thus obtained was surprisingly great, there was obviously a considerable proportion remaining, which could not easily be separated from the chaff. If therefore the hops were gathered when the lupulin existed in the greatest abundance, and, instead of being pressed and packed, were exposed to the sun till perfectly dry, there is little doubt but six pounds would yield a pound of the powder in question.‡

The foregoing experiments were not completed till late in the spring, when the best season for brewing was passed, but with the advice, and by the direction of Robert Barnes, Esq. (an experienced and scientific

* It will be understood, that by the leaves are meant the calices which form the flower, or that part of the hop commonly used in brewing.

† It is necessary to remark, that great care was taken to procure the leaves for this experiment perfectly free from the lupulin, which is ordinarily attached to them in great abundance. This cannot be done by threshing them.

‡ Nothing conjectural would here have been introduced, but with a view to show, as accurately as possible, the proportion of lupulin, that the requisite quantity may be known in case it should be substituted for the leaves of hops in brewing.

brewer, zealous for the improvement of his art) two barrels of beer were made, in which nine ounces of the lupulin were substituted for five pounds (the ordinary quantity) of hops. The result confirmed the most sanguine expectation. Though the quantity of lupulin was less than what (according to the foregoing statement) usually enters into the same quantity of wort, and though the weather during the month of June was unusually warm, and therefore unfavourable to its preservation, still the beer which is now five weeks old, is very fine. It is pleasantly aromatic and bitter, and in a perfect state of preservation.

To ascertain the preservative property of the lupulin by a more direct experiment, equal quantities of the beer were put into separate vials and exposed, unstoppered to the sun. To the beer in one vial was added a scruple of lupulin. The beer to which none was added, became mouldy and sour in ten days, the other was unchanged at the expiration of fifteen days.

Having, as I conceive, demonstrated that the lupulin, alone, contains the bitter principle and the aromatic flavour of the hop, which are essential to the excellence and preservation of malt liquor, and having shown also the feasibility of separating it from the leaves to which it is attached; I shall proceed to enumerate some of the most obvious benefits which would result from these facts, should they be found applicable to practical use.

1. It would diminish the expenses of transportation. In this the saving would be enormous. The hops which are now brought to this city, are cultivated in the eastern states, and in the western parts of this state, and the expense of transportation is from one to two cents a pound. This is on account of their bulk, rather than their weight. Were the lupulin separated from the leaves, it being but about the sixth part in weight, and not one twentieth in bulk, it might be compressed into casks, and thus transported with convenience and at a small expense. In short the difference would not be less than that of sending wheat to market before and after threshing. Might it not also, for the same reason, become a profitable article of export?

2. It would lessen the difficulty and expense of storage. Notwithstanding the present mode of pressing hops into bags (which is done not less to diminish their bulk than to preserve their virtue) their storage is, as it ever has been, an important item of expense, as well as a very great burden to the brewer.

3. One object in pressing the hop into bags is, to preserve it from the injury of the air; a long exposure to which, it is said partially destroys its virtue. Whatever may be the cause, it is well known that the value of hops is diminished by age. This could not result to the lupulin any more than to our imported teas, were it packed in casks which would secure it perfectly from the air.

4. The brewer would evade an enormous loss, which he now sustains in the wort absorbed by the hops.—Dr. Shannon, who has perhaps devoted more time and talents to the subject of brewing than any other English author, has demonstrated by a series of experiments, that one barrel of wort is absorbed by every sixty pounds of hops in the ordinary process of brewing. § The quantity of beer manufactured annually in London is upwards of one million five hundred thousand barrels, and the least quantity of hops used in making it is two and a half pounds to the barrel, or three millions seven hundred and fifty thousand pounds; now as a barrel of wort contains not less than three bushels of malt, it follows, that the quantity of malt thus annually lost by absorption, is one hundred and eighty seven thousand five hundred bushels—the price of which may be fairly estimated at as many dollars.

5. It will lessen the temptation to the fraudulent practice which now prevails, of adulterating beer with other vegetable bitters. Notwithstanding the prohibitions of parliament, there is no article which is the subject of such varied and extensive fraud in England at the present day, as that of beer. As a

§ Vide, Dr. Shannon's Treatise on Brewing.

¶ Edinburgh Encyclopedia, Vol. 2.

substitute for the hop,* the coculus indicus, quassia and wormwood have all in turn been used; but all of them are so far inferior, both in flavour and in their antiseptic or preservative properties, that the use of all vegetables in the manufacturing of beer, excepting malt and hops, is by law forbidden. By the improvement which is now proposed, so great would be the diminution in the price of the hop, from its being made an article of easy and cheap transportation, that there would be little inducement for using any other article in its stead.

6. The lupulin is exceedingly bitter, but not unpleasant, whereas the nauseous extractive matter of the leaves, which by boiling, is imparted to the beer, is unpleasant to the taste, and, when highly concentrated, is frequently ungrateful to the stomach. It is believed that few persons ever relished the peculiar bitter of the strong beer, until, by drinking it habitually, their taste becomes vitiated as is the case in the use of opium and tobacco. Soon after hops were introduced into use in brewing in England, the citizens of London petitioned parliament to forbid their use in the kingdom, as they were a nuisance, "and spoiled the taste of their drink." The leaves then are not only useless, but prejudicial to the flavour of beer.

On the virtues of this substance as a medicine, I shall at present be very brief, as it will probably be made a subject for future consideration. It has already been observed that the hop has long been regarded as a medicine of some value. In France it has been used as a tonic, and prescribed in dyspepsia and scrofula. In this country it has been most valued for its narcotic powers, and used in cases when opium was inadmissible. The most common preparation is a saturated tincture of the leaves. To this there are two important objections. 1. To give enough of the tincture of the leaves to induce sleep, the quantity of alcohol is necessarily so great as sometimes to do injury to the patient. 2. When given in large doses, it frequently produces nausea and sometimes vomiting. The first of these objections requires no proof, the second is confirmed by my own observation and by the experiments of Dr. Bryorley in his inaugural dissertation on the hop. This last effect is probably owing to the extractive matter in the leaves, for I have never seen it produced by the lupulin. I have prescribed the powder in substance, the infusion, decoction, alcoholic tincture and the extract. As its aromatic and bitter properties are imparted to water, the infusion is an eligible preparation as a tonic and stomachic; but if given with a desire to produce sleep, the tincture is the best preparation. As it has been demonstrated, both by positive and negative testimony that the narcotic principle exists in the resin only, the tincture should always be made with alcohol, and not with proof spirit. It is more difficult and expensive to prepare the extract than the tincture, and the latter in most instances is the most eligible preparation.

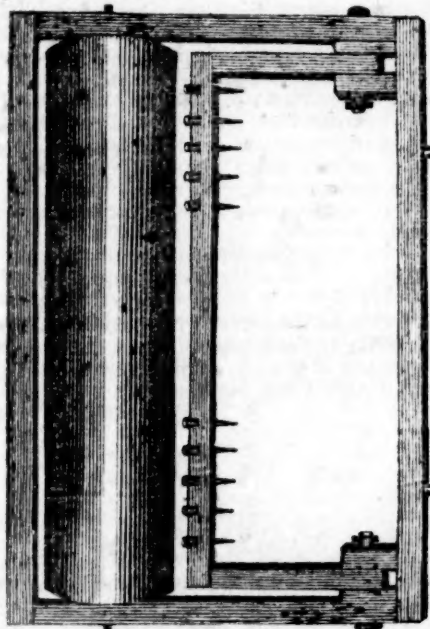
Its virtues are aromatic, tonic and narcotic; and it is, I believe, the only article in which these properties are combined. Our country abounds with vegetable bitters and tonics, many of which are more powerful than the hop, but there is perhaps none which can so properly be denominated a stomachic. That family of symptomatic diseases which are the consequence of exhausted excitability, or more directly of an enfeebled and deranged state of the stomach and bowels, are certainly much relieved by this medicine. It frequently produces sleep and quiets great nervous irritation, without causing costiveness, or impairing, like opium, the tone of the stomach, and thereby increasing the primary disease. As an anodyne it will be found inefficient compared with opium. The saturated alcoholic tincture, in doses of from forty to eighty drops, will induce sleep with as much certainty as opium, in case of long watching from nervous irritability; but the same cannot be said of its efficacy in relieving pain. This substance then, is not commended as a medicine, which ought to supersede the use of others of acknowledged virtue, but as a useful auxiliary, which undoubtedly possesses properties in some respect peculiar to itself, and as the part of the hop altogether preferable to any other, or to the whole as it is ordinarily used in tincture.

* Accum's Treatise on the adulteration of food.—Also Edinburgh Review, No. 65.

TO THE EDITOR OF THE AMERICAN FARMER.

Talbot County, E. S. Md. April 19th, 1820.

SIR,—The enclosed communication is at your disposal. Farmers from the very nature of their occupation are generally very much confined, and are too often ignorant of valuable improvements, that are very near them. This implement may be perfectly familiar to you; but I have experienced the benefit of it so strikingly, (instead of having all the force I could muster planting corn for a fortnight, I am planting my crop expeditiously, have a good force at the manure heap, and one repairing my fences at the same time,) that I will risk a work of supererogation. I have a much better slight at the use of the plough, or even of the adz and saw, than the pen, and fearing that I have not made myself intelligible, I will endeavour to make a figure that will give you a clear idea.



I have produced a poor diagram; but it will assist you in understanding what I have said. It does not appear half as well as the one I made with my adz and jack plane, which did not cost me six pence.—The teeth I took from an old drag, the gudgeons from an old roller, and the work I did myself. In the midst of my corn planting I stopped two days, till I made this implement, and the delay has gained me a week's work.

Respectfully, your obdt serv't,

RUSTICUS.

P. S. If the draft of the cultivator mentioned, should be much increased by enlarging the hold of the harrow on the earth—there is ample room to hook on a third horse. The attempts heretofore have failed, because the harrow was always placed last, and this performed the work wrong; they were, besides generally clumsy, and drew heavy.

In the corn coverer, the teeth should be sharp and in good order, and if from the state of the ground, it is found not to take sufficient hold—it is easy to weight it. I pronounce it a perfect implement.

A Labour saving Implement.

If he, who makes two blades of grass grow where one grew before, deserves the meed awarded him by the Dean of St. Patrick; the practical farmer who instructs his neighbours in the construction and use of a cheap and effective labour saving implement, is at least entitled to their gratitude.

The usual mode of preparing a field for corn planting on the Eastern Shore of Maryland, is by what we call double listing, or casting up ridges with four furrows of the plough, and then passing a roller over the top of each ridge. With the ground in this

state the planting commences, say with two ploughs. They run single furrows across these ridges at the distance the rows of corn are to be apart, generally 4½ feet. A boy with a basket of corn walks after each plough, dropping 5 or 6 grains at the intersection of these cross furrows, with the centre of the 4 furrow ridges. Six hoemen, if they are expert, if not, 7 or 8, cover the corn after these two ploughs. This force ought to plant from 20 to 23 acres per day.—The roller should always follow close after the corn coverers; it pulverises the earth, brings it certainly in contact with the grains, keeps the moisture, if the weather be dry, prevents the ground from baking, if a heavy rain succeed the planting, and under any circumstance is a cultivation, and brings the corn up quicker and stronger. If the common 4½ or 5 feet log roller is used, it will take two to keep pace with this planting force. To plant 20 acres thus, you have 4 teams, 2 hands at the ploughs, 2 at the rollers 2 droppers, and 7 at the hoe—making 4 teams of animals, and 13 labourers.

Some farmers effect the same object better thus.—The crossing ploughs are made to mark out a cut, or a certain convenient portion of the field—when they have done it, the droppers commence across this last work, walking on the middle of each ridge and dropping the grains at the intersection of the cross furrow and the middle of each ridge; they are closely followed by two light harrows, down the ridges, by which the corn is covered.—A log roller from 12 to 14 inches diameter, nine feet long, and light enough to be drawn by two horses, follow the harrows, taking two ridges at a time. This mode, if the harrow teams are brisk, will require three droppers. Thus employing 5 teams, and 2 hands at the crossing a cut a head, 2 droppers, or 3, unless they are very expert, 2 at the harrows, and one at the roller—making 5 teams and 7 labourers—and if the ground is in tolerable order this mode will effect the planting better than the first.—Some farmers flush their ground in lands 100 feet wide, roll down and harrow the surface, till well pulverised—and then by running the crossing ploughs both ways, lay the ground out very regularly, and in good order to be planted, and covered by the harrows and roller.

A union of a harrow and roller to effect the operation of covering the corn has long been a desideratum, and has been often attempted with various, but incomplete success. I have now one at work, which effects the object to my entire satisfaction—and I am planting 20 acres per day, with the labour of 3 teams and 5 hands, viz:—2 crossing ploughs, 2 droppers, and one man and team at the implement covering the grain and rolling the ground—and my corn is planted better than I have ever had it by either of the other methods—compared with the first this implement, drawn by 2 horses or mules, and managed by one man, is performing the work of the 7 hoemen and two rollers with their teams and drivers; and if the ground is harrowed in the common way, you must add two harrows, with their teams;—and thus this implement with a single man and team is performing that, to effect which, I myself have heretofore used 6 teams and 15 hands. Compared with the second method, one man and team are performing the labour of 3 men and 3 teams.

I will endeavour to explain the construction of this implement. A log of oak, or almost any other wood, 12 inches diameter, made 8 square, (or if you please a perfect octagon,) and of sufficient length to lay on, and extend across two ridges, (mine is 8 feet long.) The end pieces of the frame are 4 feet 3 inches long, 2½ inches thick, and 4 inches wide at the gudgeon holes, tapering to 3 inches at the ends—a mortise is cut in them 2½ inches from each end to receive the tenants of the fore and aft pieces, whose tenants have half an inch shoulder on the out edge. The aft piece 2 inches thick, 3 wide, of the proper length to give the roller very little play endwise, and to be framed 2 inches clear of the flat of the sides of the roller, or about 1½ inches from its angles. The forward piece, 3 inches by 2½, and the gudgeon holes having been bored so as to bring the aft piece 2 inches from the roller—the forward piece will be 2 feet 3 inches from

the flat sides—a staple is driven into the front side of this piece about 20 inches from each end to hook the trees into, so that the horses may walk each on the middle of a ridge.

Into each end of a piece of wood 3 inches wide, and 2½ thick, and 7 feet 9 inches long, fix 5 spike or duck-bill harrow teeth.—The first tooth 6 inches from the end to the centre of the hole for the tooth, and the others following 6 inches apart from centre to centre. Thus between the two middle teeth there will be a vacancy of 2 feet 9 inches—and the teeth will occupy 2 feet at each end of the bar. The two right and left teeth in each end should measure 6 or 8 inches below the brake or piece of wood, and each centre tooth a little less.

On each end of this harrow bar cut a tenant 2 inches long, 2 inches wide, with an inch shoulder on the back side, and one inch thick—frame on to these tenants two pieces of wood 2 inches by 2½ and 2 feet long, the mortice being cut an inch from one end, and the piece whereon to show fair with the back part of the harrow bar, and of course to extend forward 21 inches—2½ inches from the other end bore an inch and a quarter hole through the 2 inch way, rounding the end beyond the hole. Place this harrow bar or rake within the roller frame, 2 inches forward of the roller, and it will clear the frame of the roller 1½ inches at each end—and the end pieces on the harrow bar will reach to within one inch of the fore piece of the roller frame. Nail a piece of oak, 1½ inches thick, 7½ long, and as wide as the end frame, on the inside of each end piece immediately back of the fore piece of the roller—2½ inches from these two small pieces, frame a tough piece of wood, 2 by 2½ into each end of the fore piece, by a tenant 2 inches by ¼ of an inch, and these two little pieces showing back of the fore piece 7½ inches with the ends rounded. Bore a hole with an inch and quarter auger through the end pieces and the 1½ inch pieces nailed on, and the two little pieces last tenanted into the fore piece—the holes being 3½ inches back of the fore piece—let the end pieces on the harrow bar come into their places and the holes in them will answer to the holes just bored—put two good wooden pins through them with a head and keyed by a nail—and the harrow bar will thus be attached to the fore piece of the roller by a strong wooden hinge, and the fore piece of the roller will raise up and lower as the horses move, without taking the harrow out of the ground. Start it, and you will find it work to please you—the teeth in the harrow bar covering two rows of corn at once and the roller instantly upon it to pulverise and compress the earth. By placing the harrow bar so near the roller, the harrow is not only kept properly in the ground from the length of the attaching hinge; but a singular advantage is gained, if your ground is at all foul or turfy—for as soon as the teeth stick into a piece of turf, the next angle of the roller, that comes over, seizes on it, takes it under, and clears the harrow.

I claim no credit for this implement, nor do I know to whom the first idea belongs. I made mine by the directions and after the pattern of one used by W. H. Tilghman, Esq. one of our best practical farmers, which after various trials and alterations he brought to the state described, and for the purpose intended I doubt if it can be improved. But it strikes me forcibly, that an admirable and most expeditious cultivator might be made by lengthening the end pieces of both the roller frame and harrow, say 6 or 8 inches, fill the vacant middle of the harrow bar with teeth, and frame in a second bar just forward of the first, and place teeth in it, centering the spaces between the teeth in the first bar. If lengthening the end pieces make the roller frame too heavy forward you can easily restore the balance by extending the part of the frame behind the roller.

RUSTICUS.

November 15th, 1820.

P. S. I have found that the corn planting implement, as forwarded you, is all that can be desired in sandy or very light land; but in stiff, heavy soils the weight of the harrow bar should be doubled, trebled,

be quadrupled, as may appear necessary, and the teeth of a good cultivator should be used instead of the spikes. The implement will then require three horses, and by filling up the whole length of the harrow bar, with chisel or colts-foot teeth, will become a most valuable instrument in cultivating naked fallows.

The rapid progress of your paper in the path of celebrity affords the happiest presage of the increasing expansion of its future usefulness; it will mark a new era in the history of our agriculture; * of that art, which is INTRINSICALLY and ALONE, the SOURCE of wealth. Commerce and manufactures are her daughters, and are, in the natural order of things, subordinate to her. Agriculture is the only art, which can create: and commerce and manufactures are among her productions; they are posterior in their very birth and nature, and the summit of their most ingenious efforts is only to shift and change that wealth which agriculture has created.

Your high and animated exertions to infuse new life and vigour into the extensive and wonderful resources of our country; to develop the real wealth and power of our vast empire; and to give to the noblest and most virtuous of occupations, that distinguished elevation, which is its rightful and proper station, is worthy of all praise; and I sincerely hope that your meritorious labours will be crowned with the richest success.

Very respectfully, your obedient serv't.

RUSTICUS.

* The compliments bestowed upon our exertions in a degree far beyond their merit, would be omitted if they were not often intermingled with other and far more pertinent and useful matter.

Ed. Am. Far.

ON CLOVER.

To the Editor of the Plough Boy.

To illustrate the many advantages of clover over the grasses, not only for soiling, pasture, and hay, but for the improvement of the soil, and its efficacy in withstanding the drought, would require a greater scope than my intended limits would permit. I shall therefore briefly confine myself to those facts which have been tested by experience and evinced by practice—feeling confident that every farmer will be induced to make an experiment so valuable for his stock and the melioration of his soil.

The red and white clovers are the only sorts known in American tillage. As to the wild sort with a rough leaf, it is of no value. Another species called lupinella, has lately been introduced in Maryland, imported from Italy. It is thought that this will be a valuable acquisition to our grasses.

The nutritive matter contained in the red clover, renders it particularly advantageous for the soiling system, as well as for hay, and far preferable to the white, which is generally too short for mowing, unless mixed with other grasses, which it is said will make it grow to a greater length.

Red clover is esteemed for coming in the spring, near a month before grass; consequently it is of infinite value for feeding young cattle and early lambs. It brings the in bearing cows to milk, and puts them in vigour and health before calving, purges calves and makes them wholesome, and prevents the poaching of pastures, by furnishing food for your cattle, until the grass is of sufficient length to make the ground firm.

Clover will thrive luxuriantly in any but a

wet soil. It prefers a light sandy or loamy soils, and will with the assistance of plaster, thrive well upon gravels. A light top dressing should be given early in the spring. On tenacious soils, a small quantity of lime or soot would be preferable, but on light land the effect of gypsum is astonishing, (three pecks of which for a top dressing is sufficient to the acre.)

Sinclair's remarks on the cultivation and gathering of clover, are worthy the attention of every farmer. He says, "To insure a good crop, give a deep ploughing to the preparatory crop. Clover may be eaten off till the first of May by sheep, and about three weeks after the hay is taken off they may be put on again. For pasture other grasses must be mixed. Clover must be mown before the seed is formed; after being cut, the clover should remain in the swarth till it is dried about two thirds its thickness; it is then *not strewed*, but turned over; the hay should be as little shaken or scattered about as possible."

After frequent repetitions clover fails; on a dry soil it will last three years; from the first crop (especially on highly manured or rich land) there is no seed worth gathering, the herbage or stalks being two thick; the second crop grows more even and comes sooner to maturity; the successive crops deteriorate every year, until choked with weeds or grass.

To cultivate clover with success, the ground should be ploughed and cross-ploughed, harrowed with a heavy harrow, and cleared of stones and weeds; the seeds should be planted in early spring with grain; writers on agriculture give the preference to flax: from 6 to 10 quarts may be sown to the acre; there is little danger of it being too thick: the seeds should be harrowed in with a light harrow, the teeth of which should not exceed six inches in length. The advantages in sowing clover thick are—1st. its attaining a great length—2d. the plants are more viscous and succulent—3d. the stalk not being exposed to the sun, will not acquire the hard rind which it forms by exposure, and for its own support—4th. the soil is improved, the plants retaining the dew and sheltering the earth from the sun which absorbs its richness.

I would advise sowing a small proportion of strong stemmed grass, (when intended for hay,) as clover requires shelter when young, as well as after it has acquired its full length, being apt to lodge. If you sow it with winter grain, it would be well to sow one half your seed with the wheat, and the other half on a light snow in March, it being apprehended that it grows so fast as to injure the growth of the wheat. More seed is required when sown with spring than with winter grain. Soils also require more or less seed in proportion to their richness, poor soils requiring the least.

The seed should be plump, of a deep purple, which is the surest indication of their perfect ripeness (being a faint colour when unripe.) Seed, if ripe, will readily shed from the husk when rubbed. Lord Kaimes observes, "that clover should be exposed to the sun an hour or two before the flail is applied."

White clover is indigenous in almost every section of our county, but appears more on some soils than others; swine thrive well on

white clover, but care should be taken to have them well rung, before turned into pasture.

For permanent pastures, use on low lands apt to be overflowed, and salt marshes; a third white clover, mixed with two-thirds rye-grass, or meadow-fox-tail (herd's grass;) which prefers a moist soil, and is particularly grateful to cattle; the roots are so much matted, as to form a hard surface not easily poached; This grass is a native; and produces larger crops than any of our other common grasses; it grows tall, and thrives well on any kind of soil except sand and gravel, more especially under a northern climate. It should be cut when just out of blossom.

NUMA.

UNIVERSITY OF VIRGINIA.

Interesting account of its Progress.

CAPITOL, DEC. 5.

SIR,—I have the honour to enclose the Annual Report of the Rector and Visitors of the University of Virginia, with the proper accompanying documents, which has been made to the President and Directors of the Literary Fund, according to law, for the purpose of being laid before the legislature.

I have the honour to be, your most obedient servant,

THO. M. RANDOLPH.

President of the Board of the Literary Fund.
The Hon. the Speaker.
of the House of Delegates.

To the President and Directors of the Literary Fund.

In obedience to the act of the General Assembly of Virginia, requiring that the Rector and Visitors of the University of Virginia should make report annually to the President and Directors of the Literary Fund, (to be laid before the Legislature at their next succeeding session,) embracing a full account of the disbursements, the funds on hand, and a general statement of the condition of the said University; the said Visitors make the following Report:

The General Assembly, at their last session of 1819-20, having passed an act authorising the said Visitors, for the purpose of finishing the buildings of the University, to borrow the sum of 60,000 dollars, and to pledge, for repayment of the said sum and interest, any part of the annual appropriation of 15,000 dollars, heretofore made by law, the Board of Visitors, at their semi-annual meeting of April last, proceeded to the consideration of the said act, and of the authorities therein permitted to them.—They were of opinion in the first place, that it would be most expedient to complete all the buildings necessary for the accommodation of the Professors and Students, before opening the institution; as the maintenance of that, when opened, by absorbing all its funds, would leave nothing to complete what might yet be requisite for the full establishment called for by law.

On view of the accounts rendered by the Bur-sar and Proctor, they found that, with the aid of the loan authorised (of the commencement of its instalments for re-payment could be suspended four years,) and of their annuity dur-

ing the same time, they might accomplish the whole of the buildings of accommodation for the Professors and Students according to the estimates heretofore made, of their probable cost, of which the following statements presents a summary view:

1820. April. The existing debts are	10,000
To complete the 7 pavilions, and 31 dormitories on hand	18,000
To build 3 more pavilions and 24 dormitories to complete the lawn	27,600
To build 3 hotels and 25 dormitories completing the east back street	19,000
1821. To build 2 hotels and Proctor's house, and 25 dormitories, completing the west back street,	19,000
	\$93,600

MEANS.

1820, April. Loan from the Literary Fund	\$40,000
1821, Jan. 1. Annuity of 15,000,—\$2,400 interest of \$40,000,	12,600
Additional loan of	20,000
1822, Jan. 1. Annuity of \$15,000—\$3,600 interest of \$60,000,	11,400
1823, Jan. 1. Annuity of \$15,000—\$3,600 interest of \$60,000	11,400
	95,400

They therefore proceeded to negotiate a loan of \$40,000 from the President and Directors of the Literary Fund, reimbursable by five instalments of \$14,244 a year, beginning on the day of April 1824; and afterwards a second loan of \$20,000, reimbursable by like instalments, commencing from the day when the others should end.

On this view of their resources, the Board proceeded to authorize their Proctor to enter into contracts for the completion of the buildings already begun, and for the erection of those still wanting, so as to provide in the whole ten pavilions for the Professors required by law, five hotels, for dieting the students, and a sixth for the use of the Proctor, with a hundred and four dormitories, sufficient for lodging 208 students; and they instructed him to make, in his contracts, effectual provision that the whole shall be completed in the autumn of the ensuing year 1821. At that time therefore the buildings of accommodation for the Professors and Students are expected to be all ready for their reception; and the institution might then be opened, but that the remaining engagements for the buildings, and the reimbursement of the sums borrowed from the Literary Fund, will require the whole revenue of the University for seven years to come, that is to say until the — day of April 1828.

In the statement of expenditures and means of the University, it will be perceived that we have not taken the private subscriptions into account. Of these \$2,079 33 cents of the first instalment, \$3,194 13 of the 2d, and \$8,217 09 of the 3rd, are still due; and the last, amounting to \$10,666 50 cents, will become due on the 1st day of April next. But of these some loss will be occasioned by the distresses of the times; and the residue, from the same cause, will be so tardy and uncertain in the times of its receipt, that the Visitors have not thought it safe to found on it any stipulations requiring punctuality in their fulfilment. They have thought it more advisable to reserve it as a sup-

plementary and contingent fund, to aid the general revenue, as it shall be received, and to meet casualties unforeseen, errors of estimate, and expenses, other than those of mere building.

In the report of the commissioners who met at Rockfishgap on the first day of August 1818, it was stated that "a building of somewhat more size, in the middle of the grounds, may be called for in time, in which may be rooms for religious worship, under such impartial regulations as the visitors shall prescribe, for public examinations, for a library, for the schools of music, drawing and other associated purposes." The expenses of this building are not embraced in the estimates herein before stated. Its cost will probably be about 40,000 dollars, and its want will be felt as soon as the University shall open. But this building is beyond the reach of the present funds: nor are these indeed adequate to the maintenance of the institution on the full scale enacted by the Legislature.

That body, aware that Professors of desirable eminence could not be expected to relinquish the situations in which they might be found, for others, now untried and unknown, without a certainty of adequate compensation confided to the discretion of the Visitors the salaries which should be stipulated to the Professors first employed. But the annuity heretofore appropriated to the maintenance of the University cannot furnish sufficient inducement to ten Professors, of high degree, each in his respective line of science; and yet to employ inferior persons, would be to stand where we are in science, unavailed of the higher advances already made elsewhere, and of the advantages contemplated by the statue under which we act. If the legislature should be of opinion that the annuity already apportioned to the establishment and maintenance of an institution for instruction in all the useful sciences, is its proper part of the whole fund, the Visitors will faithfully see that it shall be punctually applied to the remaining engagements for the buildings and to the reimbursement of the extra sum lately received from the general fund; that during the term of its exclusive application to these objects, due care shall be taken to preserve the buildings erected from ruin or injury, and, at the end of that term, they will provide for opening the institution in the partial degree to which its present annuity shall be adequate.—If, on the other hand, the legislature shall be of opinion that the sums so advanced in the name of a loan, from the general fund of education, were legitimately applicable to the purpose of a University, that its early commencement will promote the public good, by offering to our youth, now ready and waiting for it, an early and near resource for instruction, and by arresting the heavy tribute we are annually paying to other states and countries for the article of education, and shall think proper to liberate the present annuity from its engagements, the Visitors trust it will be in their power, by the autumn of the ensuing year 1821, to engage and bring into place that portion of the Professors designated by the law, to which the present annuity may be found competent; or, by the same epoch, to carry into full execution the whole ob-

jects of the law, if an enlargement be made of its participation in the general fund adequate to the full establishment contemplated by the law.

The accounts of receipts, disbursements, and funds on hand, for the year ending with present date, as rendered by the Bursar and Proctor of the University, are given with this report as is required by law.

TH. JEFFERSON, Rector.

October 2, 1820.

FROM THE AMERICAN CENTINEL.

TO MY BROTHER FARMERS.

I am sorry that there is so much need of the admonitions I am about to give. Depend on it, you do not "*work it right*," or you would make your farms and stocks twice as profitable as they now are. Many of you *farm too much*. You would find it much more profitable to farm twenty acres well, than forty by halves. The last season, I made my ground produce at the rate of one hundred bushels of Indian corn to the acre. Is not this much better than a common crop of thirty or forty bushels? You will most certainly say it is, and with the same breath ask how I manage to make it produce so plentifully? My ground being much infested with ground mice, or moles, and also overrun with grubs and other vermin, I put on, early in the month of March, about seven bushels of salt to the acre, which thoroughly destroys all kind of vermin, being an excellent strong manure: early in April, I gave it a good coat of stable manure, and ploughed and worked the ground over and over, until it become completely mellow; I then had every corn hole filled with hog manure, and after dropping my corn, (which had been previously soaked in warm water) I scattered a pint of lime over every hill, and then covered the whole with a little mellow earth. In about one week the corn began to come up plentifully, after which I nursed it well with the plough and hoe every other week for eight weeks, at which time it was as high as my head, and not a spire of it was destroyed either by the frost, grub, or birds. My other things I manured and nursed equally well, and I have been amply paid for all my extra care and trouble, as I raised more than twice as much per acre as any of my neighbours, and did it in much less time, I mean I got all my harvesting done two or three weeks before many others. This is accomplished in a great measure by redeeming time; rising between 3 and 4 o'clock in the morning; then, if the day be very sultry and hot, I lie by from 12 to 3, and rest. I then feel refreshed and able to work until quite dark.—This I call "*working it right*." Whereas, should I lay in bed until the sun be up and *shame me*, haunt the tavern at night, drink too much whiskey, but half manure, half plough, half plant, half nurse, half harvest, and do every thing else by halves, I surely should not "*work it right*," nor get half a crop.

I shall now conclude, by giving you, for further consideration, a few excellent observations, from a wiser head, perhaps, than my own, which I shall endeavour to improve for

myself, and hope every brother farmer will do likewise, viz.

"I often say to myself, what a pity it is our farmers *do not work it right*. When I see a man turn his cattle into the road, to run at large, and waste their dung, during a winter's day, I say this man *does not work it right*. Ten loads of good manure, at least, is lost in a season, by this slovenly practice—and all for what? For nothing indeed but to ruin his farm.

So when I see cattle late in the fall, or early in the spring, rambling in a meadow or mowing field, pouching the soil, and breaking the grass roots, I say to myself, this man *does not work it right*.

So, when I see a barn yard, with a drain to it, I say the owner does not work it right, for how easy it is to make a yard hollow, or lowest in the middle to receive the urine and all the wash of the sides, which will be thus kept dry for the cattle. The wash and urine of the yard mixed with any kind of earth, or putrid straw, is excellent manure; yet how much do our farmers lose by neglecting these things;—in fact, they *do not work it right*.

When I see a Farmer, often going to the retailer's store, with a bottle or jug, or lounging about a tavern, or wrangling about politicks, or quarrelling with, and defaming his neighbour's good name, I am certain such a man *does not work it right*."

A PENN FARMER.

Philadelphia County, Dec. 1820.

From the Plough Boy.

ON THE HORN DISTEMPER.

I have this moment been reading in your Plough Boy of the 9th inst. Mr. A. C's. observations on Hoof, Tail, and Horn distemper; of the first I have no knowledge except by hearsay, although I have been many years a cattle-feeder; but of the horn distemper I have had opportunity to know much. That it is the offspring of the tail soak, (as the disease of the tail is generally called,) I think may be refuted, by requesting those in every town, who have had the hard fortune to be the earliest settlers, to recollect that during the three or four first years of the settlement of every new township, while as is ever the case, cattle, in winter, suffer extremely from want of suitable food and better covering, the horn distemper was very prevalent, and that after good keeping becomes plenty, and in all cases where cattle are liberally fed, the disorder seems to have fled the country, while the tail soak is common in all stocks of cattle without distinction. My experience tells me the cattle poorly fed become feeble, and when severely pinched with the cold, their blood being weak, is driven from the extremities, which, becoming thus defenseless are of course frozen, and I believe it is here proper to state also that the horns become hollow in proportion to the poverty of the creature that wears them; those of a very spring poor kind are almost as deficient as a powder horn. It is a pretty general saying that if the horns are cold, the creature has the sick horn distemper; this is nothing to judge from; in cold

weather all cattle's horns are cold, when they are in the act of eating, or have ceased for fifteen minutes to chew their cud. The disorder is generally detected by the unusual motion of the head, which is generally understood, but when that is not the case, it may be instantly known by a greater hollowness of the flank than any other disorder, that I have noticed ever gives. It is successfully treated by boring the horns, both upper and under side, that the drain may have vent, and administering at least two portions of salts, or where that cannot be procured, such physic as can be obtained, which may be least calculated to promote inflammation; then carefully nourish the patient, and endeavour to keep clean the horns by syringing with salt and vinegar. There is one absurdity in the usual treatment of this disorder which has cost the lives of many distempered cattle: I have generally found those who professed skill in this disorder to follow boring the horns with large doses of cherry bark, soot, eggs and every bracer of the stomach that they can scratch their recollection up to. The alimentary canal in this distemper, is always extremely foul, and until it is suitably cleansed with physic, is overloaded and injured by any stimulating or bracing portions that can be applied; and where nature has strength sufficient to bear with this treatment, and eventually rise against its burthens, the want of this early assistance most distressingly retards its progress.

C. A.

P. S.—I think I have good ground for saying that if the tail of a calf has so much cut from the end as to take half an inch of the bone, he will be ever after safe from the common disorder of tail soak.

C. A.

TO THE EDITOR OF THE AMERICAN FARMER.

SIR,—In number 35 of the American Farmer, I have read a letter addressed to you from your correspondent H. W. of Baltimore County, propounding several questions on the subject of the best method of raising potatoes; which (as far as my limited experience extends,) I shall endeavour to answer.

From actual experiment I have found, that potatoes succeed better, both as to quality and quantity in a latitude above 40°, than under.—As I at present reside rather north of this point, (having removed from about 37°) I think, I am justified in this remark. I shall confine myself as much to facts as possible, leaving it to others to assign reasons.

1st Time of Planting.—If new ground, from 1st to 10 June. If old ground, from 10 to 15th May.

2nd. The mode of ploughing and preparing the ground? Whether new or old ground, it ought to be ploughed late in the fall and stirred early in the spring, and just before planting, again ploughed and harrowed; when it may be either drilled or checkered, as you intend to plant it. My method, is to drill about four inches deep, and about four feet apart, to plant the pieces six inches asunder and cover them from two to three inches deep. In choice of ground, I select that which is a little inclined, that the water will not lay on it, giving the preference to new ground, composed of a deep

loam mixed with clay. When I use old ground before ploughing it in the fall, I give it a coat of well rotted barn yard manure, and after drilling it, I put from one two inches thick of the same kind of manure on the bottom of drills, on which the potatoes are planted and covered as above. As to rotation of crops, I follow potatoes with flax, and turnips, the first succeeds, the last is but indifferent; but you may follow the flax the same year with wheat, which in every case I have tried, has done better than turnips. Indian corn may follow wheat—next year oats and the fall rye, after which a year in pasture; the next fallow for wheat; which the soil will be so far exhausted as to require renewal in the manner before-mentioned.

With respect to the time and frequency of dressing. When the stock has attained the height of six inches, the plough passes four times between each row followed by the hoe in order to relieve those that may be covered, and to draw the earth to within two inches of the top—late in August, they are again ploughed with a shovel-plough, when they receive the last and what is termed the great *hilling*.

I have been in the practice of cultivating two kinds, a large smooth skinned white potato, that answers equally well as a summer and winter potato; when planted late in April, they grow to the size of hen's eggs and larger, by the first of July; these are not so productive as the other kind, a long bright red potato, that have a great many eyes, and which grows to great length and thickness—these are not considered valuable for culinary purposes immediately after raising, being watery; but in March they become dry and remain good during the summer. Of the last kind, I plant about sixteen bushels per acre, which in a good season yields from three to four hundred bushels—about twenty bushels of the white, which produces from 2 to 300 bushels.

If you should think proper to publish the foregoing, you will do me a kindness by putting it in better dress; my station is at the plough, not the quill.

Respectfully, yours, &c.

THOMAS KELTY,
near Pittsburgh, Pa.

JOHN S. SKINNER, Esq.

TO THE EDITOR OF THE AMERICAN FARMER.

Experiments with Ruta Baga, in North Carolina, and an account of the state of crops and prices—extract dated.

ALBRIGHT, N. C. Dec. 12th, 1820,

SIR,—I am under considerable obligations to you, for the Ruta Baga Seed you sent me last spring. I sowed some of them (in a piece of ground in high tilth,) about the middle of July, and they are yet standing and growing, although there has been some hard frost—some of them are as large as a quart pot, they had astonishing tops—among them there were a few seeds of another kind I suppose, for they grew very different—one of them branched out in several tops, say 4 to 5 separate tops, grew very flat and broad.—I intended to see how large it would have gotten—but some person I suppose in endeavouring to see how large it was, raised it too high and broke the tap root, and the top

withered—I raised it and weighed it, top and all, it weighed 12 pounds. I measured it closely round the largest way after the top was trimmed off, and it measured 29½ inches in circumference. I will set it out and endeavour to save it, through the winter.

Our crops yielded greatly beyond our calculations, we have bread stuffs in great plenty—our cotton crops are very small in this section of the country; but the yield this season was rather over an average one, but the staple not good. We have saved our wheat later this season than usual; the fly was plenty in our fields until after there had been several hard frosts; we have had for several weeks beautiful open weather, which we think favourable to our wheat.

Things have undergone a great revolution here as in other places. Since 1817, agriculture is more respected by far, than ever it was at any previous period; some are groaning under the burthen which better times brought on them, and resolving that if they can extricate themselves now, that nothing shall ever involve them again. Money is very scarce indeed. Wheat is worth but 50 cents—Corn \$1 to \$1 25 per barrel—Brandy 50 to 60 cents—Whiskey 37½ cents, but will soon be lower—Cotton and Tobacco, not selling—Pork, \$3 50 to \$4—Beef, 2½ to 3 cents per lb—Labour still keeps up very far above the depreciation in other things.

If an opportunity would offer, I would send you some of our corn; there are several kinds raised among us, the goard seed, the yellow, the flinty ditto and the white; all kinds have their advocates, and no one kind appears to stand greatly pre-eminent among us. I would be much pleased with some of Mr. Law's mentioned in your last paper. I am anxious to change seed.

I have an entirely new plan for a farm-yard, which I will give you as soon as leisure will permit. I am much better pleased with it than any plan for feeding and making manure, I have seen used either in this state, Virginia, Maryland, Delaware, or Pennsylvania, all of which I have examined.

FOR THE AMERICAN FARMER.

Talbot County, E. S. Md. May, 11th.

SIR—I send you an extract from an old Journal published at Berlin 1727, detailing the method of curing the diseases, and resuscitating injured and failing trees.

I should not do this upon the authority of the paper alone, as the process may strike you as extraordinary. But I can give you the most perfect assurance, that the venerable patriot, Governor Seargeant, residing near Natches, and sometime Governor of Mississippi, has practised the method of success, at least since the year 1810 to this time.

RUSTICUS.

From the Berlin Messenger, Vol. 3, page 27 and 28 published at Berlin, 1727.

First—The time of the summer solstice, or longest day in summer, should be observed, for at that moment the sap flows most abundantly.

2nd—The whole bark on the body from the lower or main limb to the earth must be taken away, for inequality, if remaining, and regrowing would create deformity.

3rd—The Flowing sap should be equalized with a goose feather, and drawn to the parts or spaces not yet covered.

4thly—That the heat of the sun should not impede the flow of the sap, the stock should be made naked in the shade in the part of the meridian most powerful with a spread sheet, connected or erected with reeds, or in some other mode, for the convenience of the place. In the same manner the violence of the wind is to be prevented, that they may not be injured by dust or sand.

5thly—All things whatsoever are to be absent, that by their touch could injure their new, and yet soft bark, whose tenderness is such, that it might be injured by the least friction.

By these arts, they are used to the barks of trees, and to the possessors of such trees, these experiments can be especially useful."

FOR THE AMERICAN FARMER.

VALUABLE PROPERTIES OF THE WILLOW,
Washington, 1st Dec. 1820.

DEAR SIR,—For the information of your subscribers, I beg leave to mention a property of the Weeping Willow and I believe of the common willow, which they may not have witnessed; and that is, the great abundance of the finest saccharine juice which it contains. I discovered this fact many years ago, by accident, having shot an arrow into one of the upper branches, upon plucking it out, a considerable stream of clear water issued from it, which tasted so extremely sweet, that I held a tumbler under it, and drank it for its pleasantness. I have not tried the trunk of the tree, but have no doubt, in the spring of the year, when the sap rises, it might be procured from the body as well as large branches, by an incision through the bark. I will warrant it to be, as copious and as sweet as that of the sugar maple.

I am yours respectfully.

L. SAWYER.

From the New York Gazette, Nov. 20.

A Ploughing match was this day performed near Mount Vernon, for the purpose of making trial of the merits of the different ploughs there exhibited. The land upon which the experiment was made, was a stiff sod. The quantity required to be ploughed by each was twenty furrows, each one hundred yards in length, six inches deep, and ten inches wide. The draught of each plough was tested by the dynamometer.—The undersigned having been appointed by the different competitors as umpires, to decide upon the performance of their respective ploughs made a careful examination of the work done by each, of which the following is the result:

1st. Henry Burden's plough did the best work with the least power, the index of the dynamometer averaging 2 1-4 cwt.

2nd best. George Woodward's (two-wheel-plough) with 2 1-2 cwt. power.

3rd. John C. Stephen's with 2 3-4 cwt. power.

4th. Jethro Wood's (improved patent) 3 1-4 cwt. power.

5th. George Nixon's with 3 1-4 cwt. power.

DAVID WAGSTAFF.

REUBEN HAINES,

ISRAEL DEAN,

WM. GAINER.

JOHN AYRES.

From the Pittsfield (Mass.) Sun.

THE HORSE RAKE.

TO THE FARMERS OF BERKSHIRE.

The present period of low prices of products, and the necessity of economy, renders it expedient to inquire whether the labour of conducting our farms may not be abridged by the introduction of what are called labour saving machines. My attention has been called to the consideration of the subject. In one instance, viz. that of gathering hay after it is made, I am confident the labour and expense may be greatly abridged.—In one or two sections of our country, the *Horse Rake* has been introduced and used most successfully. To satisfy myself fully on the subject, the last season and the present, I have had one in operation. It has exceeded my expectations, and I now recommend it to the immediate use of all our farmers. It will enable one man, with a steady horse and boy, to perform at least as much work in gathering hay into winrow and pile, as *six good men* can accomplish, and as clean as is commonly done in raking by hand. The experiment which I have made will warrant this statement. The expense of the *Horse Rake* is small, not exceeding two dollars. It is constructed thus: take a stick of timber, of say any stout wood, ash, chesnut, fir, or spruce, will be sufficient: ten feet long, if your mowing lands are free of obstructions, and if obstructed with stumps or rocks, then shorten the head of the rake to your convenience. The rake head may be three and a half inches by two and a half diameter, or as you please. The teeth should be twenty two inches long, and one inch by one inch and a half diameter, and set firmly into the head about two inches and a half apart. These teeth may be made of firm white ash, or walnut, or oak. The teeth should be made at the end to turn up, so as to run on the ground like a small sled, and not into the earth. On the top of the head should be fixed about seven small standards, eighteen inches high, to prevent the hay falling over the head. In the centre of the head fix two handles, such as you have on ploughs, at a suitable distance, to guide and steady the rake. From the ends of the rake, extend a rope, of the size of a cart rope, to fasten the horse's collar. The distance of the horse from the rake may be such as to leave room for the hay to gather. Observation will soon direct the length of the ropes. Care must be used to have the teeth set even and firm that they may run near the earth. This rake is used to collect the hay into winrow, or pile it, and it is useful in all grainfields to glean the scattered grain, and to lay down the stubble close to the earth to rot and promote vegetation.

By a Member of the
Berkshire Agricultural Society.

P. S. A Horse Rake is in use on the farm of Thomas Gold, Esq. at Pittsfield.

THE POLAND OATS.

The following is the result of an experiment made this year by Mr. George Farley, on his farm in Chesterfield county, contiguous to this town. Produce from *one* grain of the Poland Oat; 16 branches, or stalks, 5 1-2 feet in length, longest head 23-3-4 inches, shortest do. 22 1-2

do.—average number of grains on each head. 301—yielding the prodigious increase of 4816 grains.

TO PREVENT APRICOTS FROM FALLING BEFORE THEY ARE RIPE.

From a Correspondent.

Uncover and expose the roots to the frost from December to March, then re-cover them.

From the Boston Gazette.

POST-OFFICE AFFAIRS.

There are about 4030 Post Offices in the United States, and we find *all* the Postmasters were born in America except 161. They are compensated by a certain per centage on postages collected. The following is the state of their salaries for one year:

Postmasters whose salaries are under 100 dollars.	3557
From 100 to 500 dollars,	403
From 500 to a 1000,	33
From 1000 and upwards,	27
Of 2000 dollars, (this being the utmost limit allowed.)	10

Total, of Postmasters, 4030

In all the above post offices, there are only about 103 clerks employed, all of which were born in America, but 7.

There are 481 Mail Contractors, all of which were born in America but 20. They have various prices for their labour, according to the quantity which they undertake to do. There are 27 who have less than 100 dollars; some from 100 to 500; 500 to 1000; 1000 to 2000; 2000 to 5000; 5000 to 10,000; 10,000 to 15,000; and one Contractor has upwards of 30,000.—These items we hope will be interesting to some of our readers.

THE FARMER.

BALTIMORE, FRIDAY, DECEMBER 22, 1820.

Information is respectfully requested through the medium of the American Farmer as to the best method of separating the seed from the head or pod of clover. Those who politely answer to inquiries made in this way, have a special right in return to ask for information on any other subject with which they may not be so familiar.

The observations of our good correspondent, Rusticus, on a labour saving method of planting Indian corn, are now before our readers, and in good time to be availed of in the operations of our most southern subscribers. We are strongly of opinion, that it is not expedient to continue deep ploughing of corn during the whole period of its growth. The ground ought no doubt, to be deeply ploughed in the first instance, but it is believed that the after culture should consist in light and frequent stirrings with the harrow and cultivator, and we trust that the effect of these two different systems will be amply tested during the ensuing season.

The ill effects of dock weed, and the difficulty of extirpating it, have occasioned great perplexity to the Farmer. We are well advised, that if chopped off just below the surface of the ground, after frost has set in, the frost will thoroughly penetrate and destroy every fibre of the root, so that it will not re-appear the next season.

Present Prices of Country Produce in this Market.

Actual sales of WHEAT—WHITE, 80 cts.—RED, 73 to 74 cts.—CORN, 35 to 37 cts.—RYE, 46 cts.—OATS, 26 cents—FLAX Seed 95 cts. to \$1—BARLEY, 45 to 50 cts. HAY, per ton \$15 50—STRAW do. \$7—FLOUR, from the wagons, \$3 87½—WHISKEY, from do. 33 cts.—BUTTER, per lb. 25 to 31 cts.—EGGS, per dozen, 31 cents.—BEEF, per lb. prime pieces, 9 to 10 cts.—VEAL, per lb. 8 cts.—MUTTON, per saddle, 8 to 10 cts.—PORK, hog round, \$5 to \$5 50—TURKEYS, 75 cents to \$1 50—GEESSE, 50 to 62½ cts.—HAMS, 12 to 14 cts.—MIDDINGS, 10 cts.—POTATOES, per bushel, 87½ cts.—TURNIPS, do. 37½ cts.—LIVE CATTLE, \$6 50.

LONDON WHITE LEAD, \$4 25—American do. \$3 75. Boiled Oil, \$1 37½—FEATHERS, 50 to 62½ cts.—TAN, \$2—TURPENTINE, soft, \$2—SPIRITS, do. 35 cents—PITCH, \$2 25—LARD, 11 to 12 cts.—SHINGLES best Deep Creek, \$8 50—Do. Small, \$4 75—FLOORING PLANK, 5-4, \$27—COTTON, Upland, 15 to 17 cents.

Virginia Tobacco, good quality, will bring from \$7 75 to \$8 50.

WOOD'S IMPROVED PREMIUM PLOUGHS, &c.

J. P. CASEY,

No. 2, Hanover Street Baltimore.

Hourly expects per the sloop Hiram, from New York, a number of Premium PLOUGHS.

This improved Plough obtained the premium over 12 other Ploughs, at the last county show, N. Y. and is supposed to combine every quality necessary for a perfect Plough; it is put together without screws, and can be repaired by the farmer in a few minutes in the field, it is perfectly tight, the standard has resisted the force of 11 yoke of oxen.

Casey has for sale, a variety of Agricultural implements, Garden Tools, Seeds, the growth of the northern states, &c. Shaker's seeds in boxes, a few dozen bright box handle, English Garden Spades, Russia Mats, &c. &c. Orders made up for the West Indies, Southern states, and Western country, all of the best articles, warranted good, on the lowest terms.

Dec. 22.

Evans' Patent Cornsheller.

I have on hand, and intend keeping a constant supply of Evans' Patent Cornshellers, at my Plough and Machine Manufactory: to many persons these machines are well known, but for the information of others, they are small and portable, being chiefly composed of cast iron, and therefore not liable to get out of order; they are acknowledged by good judges, and those who have used them, to be the best machines ever invented for shelling corn. One man and a boy can shell 150 bushels per day, or 15 bushels an hour.

I expect soon to publish the description of a hill side Plough, accompanied by a plate.

Also—A description and plates of a drill machine which will open the ground, drop corn, beans, and all kinds of small seeds, and cover them at one operation. And a general assortment of Ploughs, and other implements as usual.

Price of the above, \$25.

ROBERT SINCLAIR,

Baltimore, near Ellicott's wharf.

Dec. 22, 1820.

The Editor has no hesitation in recommending this contrivance, as decidedly the best he has seen for shelling corn.

Ed. Am. Far.

BALTIMORE,

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